

299-W22-38 (A7857) Log Data Report

Borehole Information:

Borehole: 299-W22-38 (A7857)		Site: 216-S-23 Crib			
Coordinates (WA St Plane)		GWL¹ (ft): None	GWL Date: 08/12/03		
North	East	Drill Date	TOC² Elevation (ft)	Total Depth (ft)	Type
134647.796 m	567137.831 m	12/68	698.89	233	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded steel	1.45	6 5/8	6	5/16	+1.45	174

Borehole Notes:

The logging engineer measured the casing stickup using a steel tape. A caliper was used to measure the outside casing diameter. The caliper and inside casing diameter were measured using a steel tape, rounded to the nearest 1/16 in.; casing thickness was calculated. Ledgerwood (1993) reported that the casing was perforated between 200 and 233 ft. Total depth (233 ft) and the date drilled are derived from Ledgerwood (1993). The total logging depth was 224.0 ft. Apparently the casing has collapsed or sediment has built up inside the casing. The logging engineer determined there was no water in the borehole. Coordinates and top of casing (TOC) elevation are derived from HWIS³. Logging data acquisition is referenced to the TOC.

Logging Equipment Information:

Logging System: Gamma 1E	Type: SGLS (70%) SN: 34TP40587A
Calibration Date: 07/03	Calibration Reference: GJO-2003-468-TAR
	Logging Procedure: MAC-HGLP 1.6.5, Rev. 0

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat	3		
Date	08/12/03	08/13/03	08/13/03		
Logging Engineer	Spatz	Spatz	Spatz		
Start Depth (ft)	224.0	82.0	58.0		
Finish Depth (ft)	59.0	59.0	2.0		
Count Time (sec)	100	100	100		
Live/Real	R	R	R		
Shield (Y/N)	N	N	N		
MSA Interval (ft)	1.0	1.0	1.0		
ft/min	N/A ⁴	N/A	N/A		
Pre-Verification	AE016CAB	AE017CAB	AE017CAB		
Start File	AE016000	AE017000	AE017024		
Finish File	AE016165	AE017023	AE017080		

Log Run	1	2 Repeat	3		
Post-Verification	AE016CAA	AE017CAA	AE017CAA		
Depth Return Error (in.)	-1	N/A	-1		
Comments	Fine-gain adjustment made after file -159.	No fine-gain adjustment.	No fine-gain adjustment.		

Logging Operation Notes:

Spectral gamma logging was performed in this borehole on August 12, and 13, 2003. Logging was conducted with a centralizer on the sonde and measurements are referenced to TOC. A repeat section was collected in this borehole to evaluate system performance.

Analysis Notes:

Analyst:	Henwood	Date:	09/15/03	Reference:	GJO-HGLP 1.6.3, Rev. 0
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Pre-run and post-run verifications for the logging system were performed before and after each day's data acquisition. The acceptance criteria were met.

A casing correction for 0.3125-in.-thick casing was applied throughout the borehole.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with an EXCEL worksheet template identified as G1EJul03.xls using an efficiency function determined from annual calibrations. Dead time and water corrections were not necessary.

Log Plot Notes:

Separate log plots are provided for the man-made radionuclides (^{137}Cs and ^{60}Co) detected in the borehole, naturally occurring radionuclides (^{40}K , ^{238}U , ^{232}Th [KUT]), a combination of man-made, KUT, and dead time, and total gamma plotted with dead time. For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, casing corrections, or water corrections. A repeat log section of SGLS data is also included.

Results and Interpretations:

^{137}Cs was the man-made radionuclide detected in this borehole. ^{137}Cs was detected near the ground surface (1 pCi/g) and at a few sporadic locations in the borehole near its MDL of approximately 0.2 pCi/g.

Notable changes are observed in the KUT and total gamma logs. The driller's log suggests a "fine gray sand" that may coincide with an interval between 46 and 51 ft identified by relatively higher ^{40}K concentrations. The interval between 160 and 190 ft is referred to as a "fine sand" in the driller's log and coincides with relatively higher concentrations of ^{40}K and ^{232}Th .

The repeat section indicated good agreement of the naturally occurring KUT.

References:

Ledgerwood, R.K., 1993. *Summaries of Well Construction Data and Field Observations for Existing 200-East Resource Protection Wells*, WHC-SD-ER-TI-007, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

¹ GWL – groundwater level

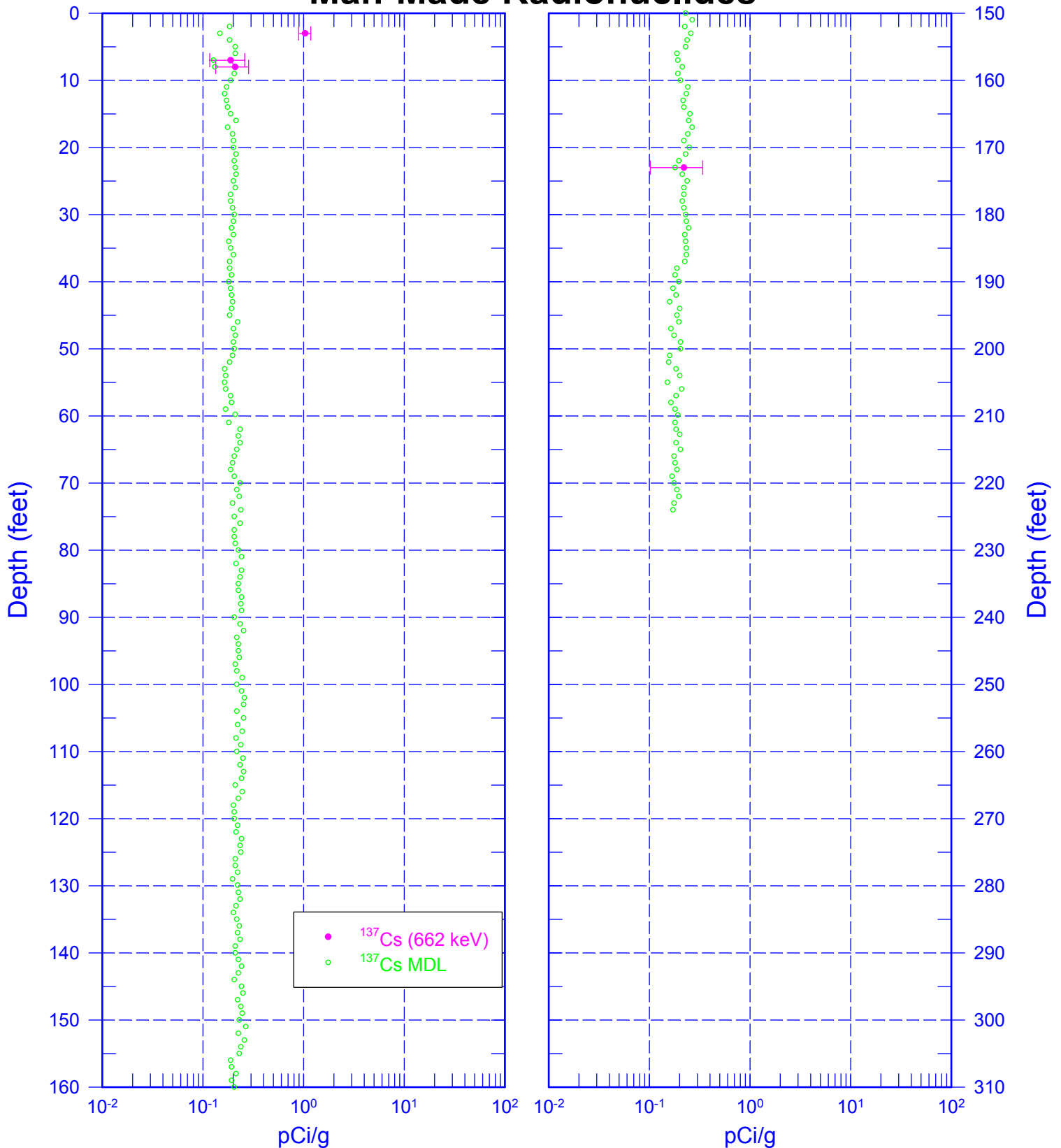
² TOC – top of casing

³ HWIS – Hanford Well Information System

⁴ N/A – not applicable

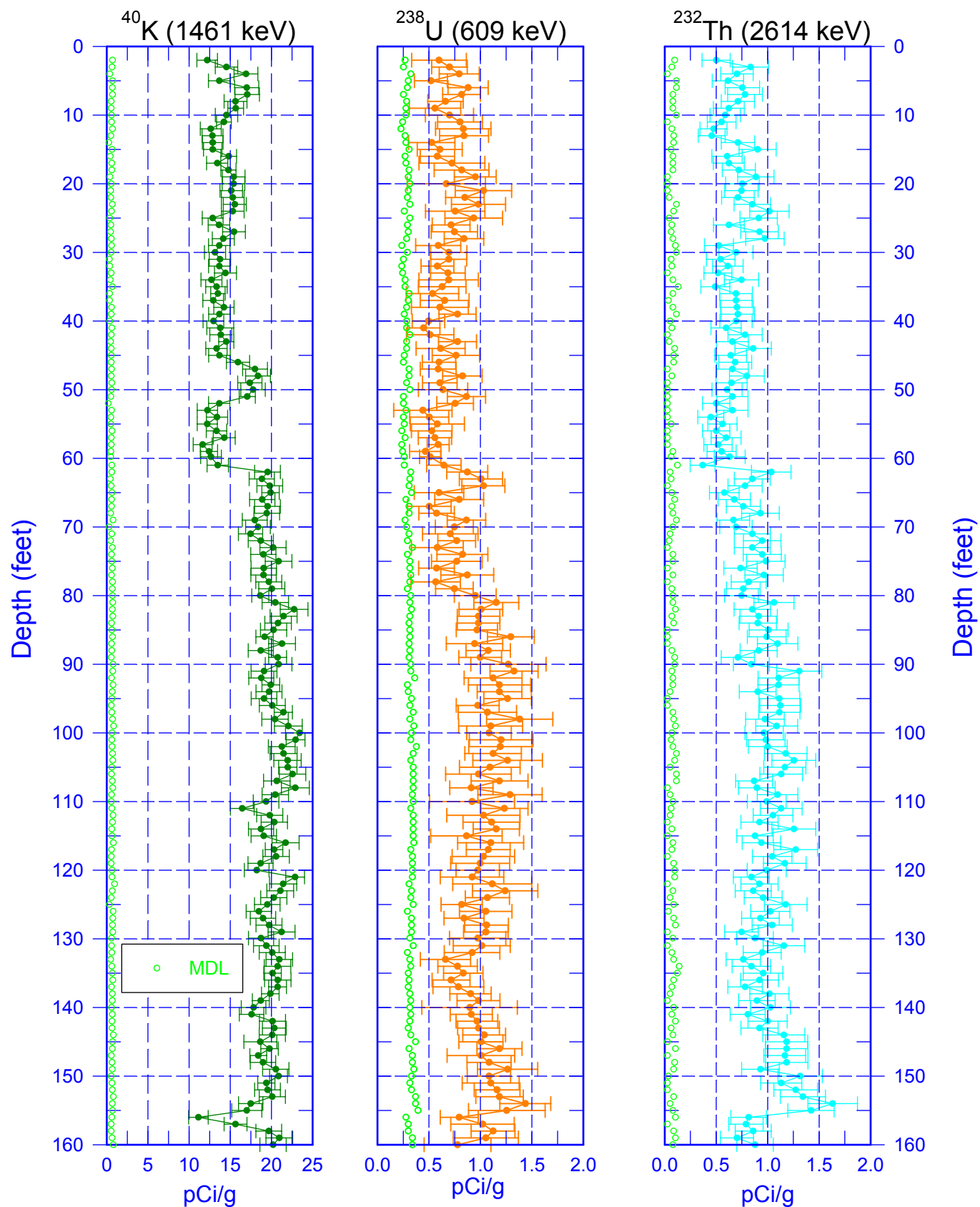
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Man-Made Radionuclides



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Natural Gamma Logs



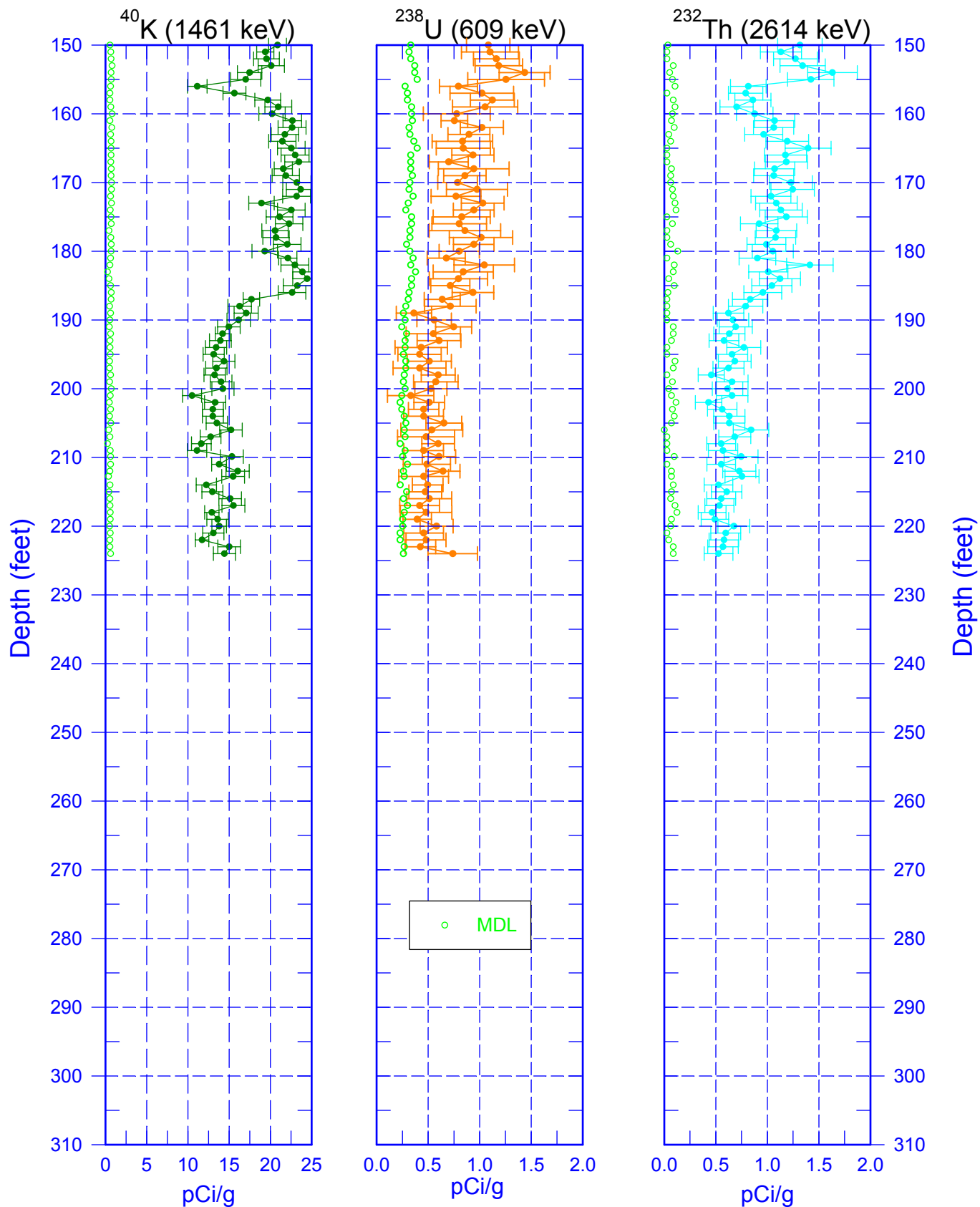
Zero Reference = Top of Casing

Depth scale: 1" = 20 ft

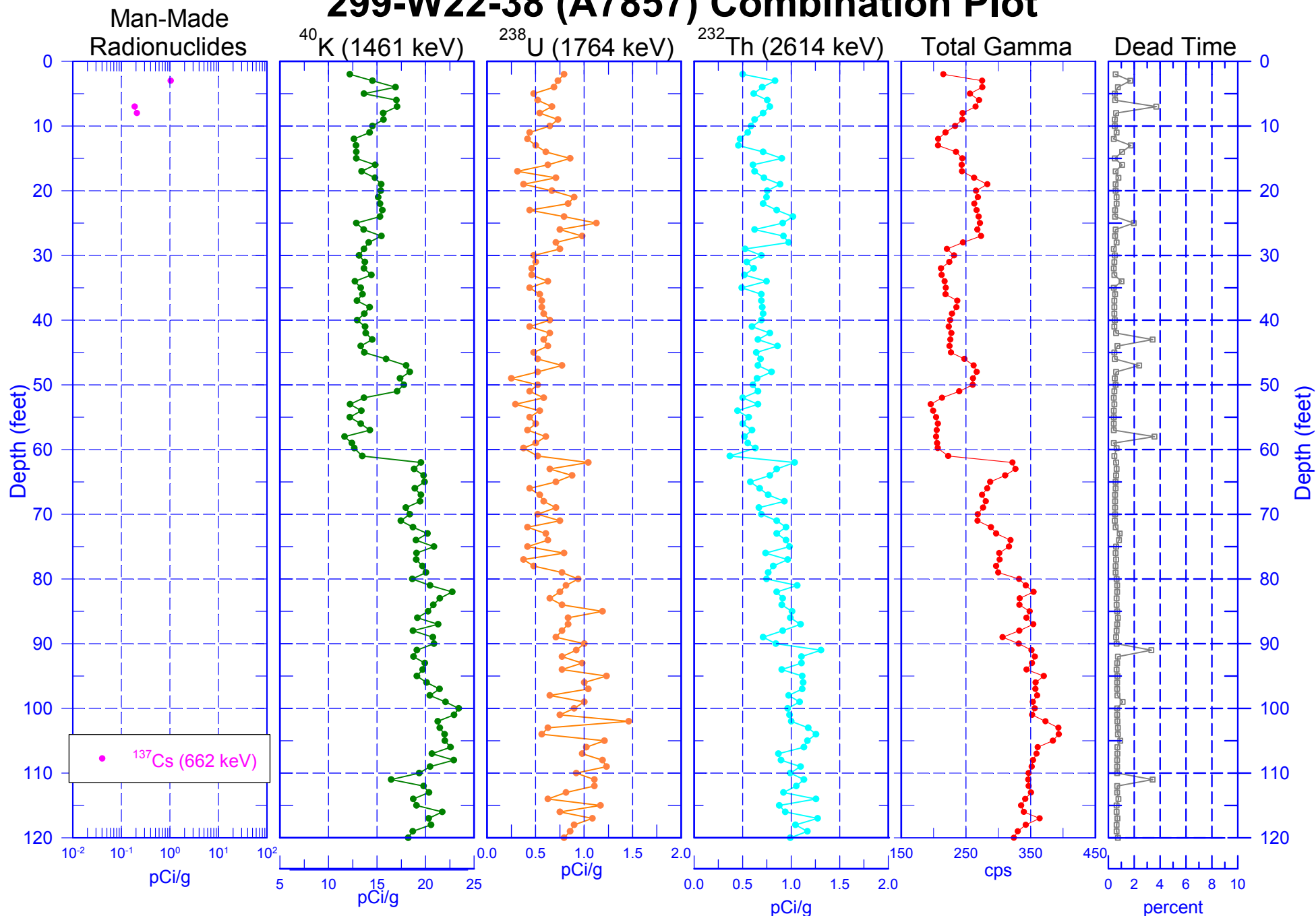
Last Log Date - 08/13/03

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Natural Gamma Logs



299-W22-38 (A7857) Combination Plot

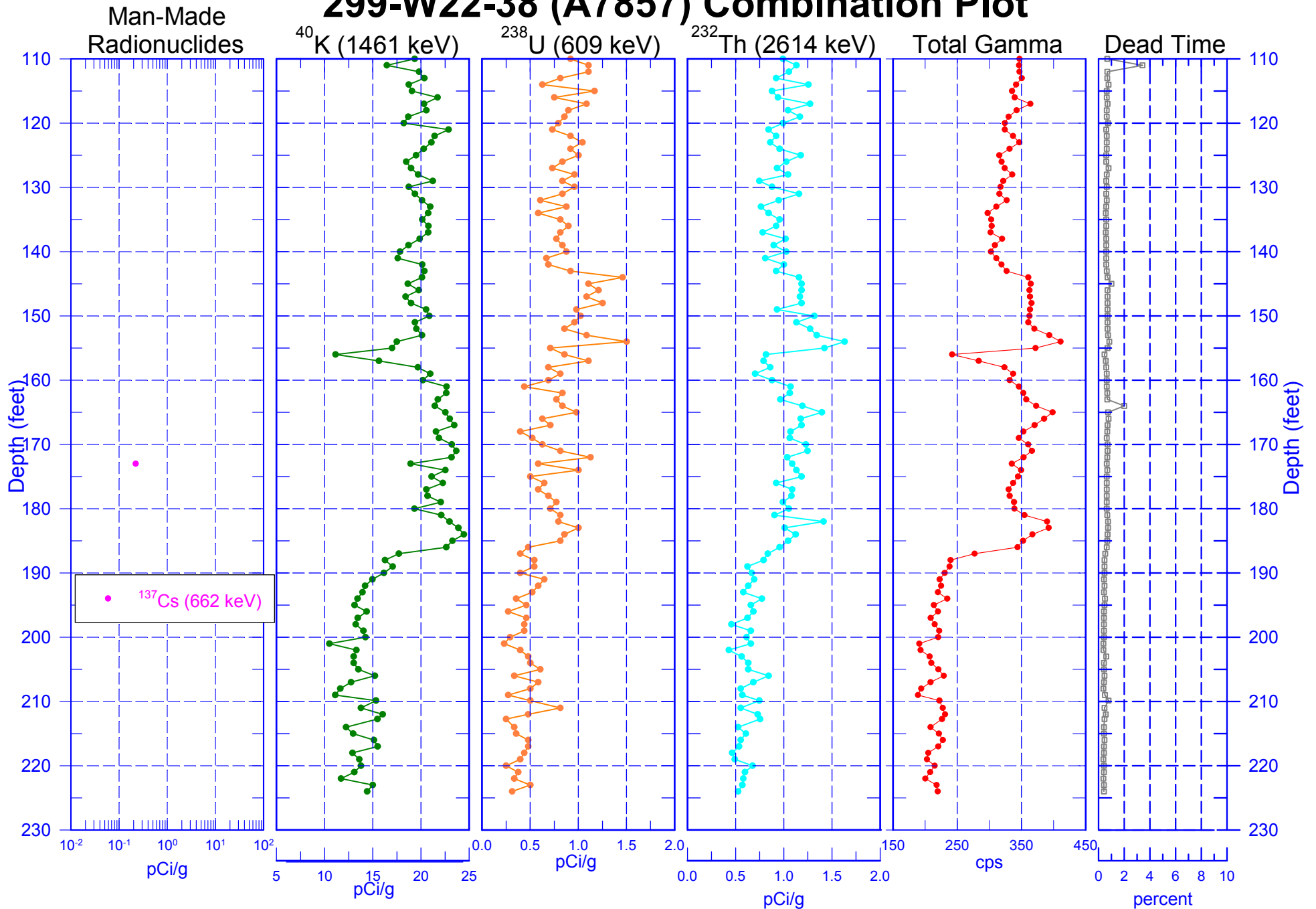


Zero Reference - Top of Casing

Depth scale: 1" = 20 ft

Last Logging Date - 08/13/03

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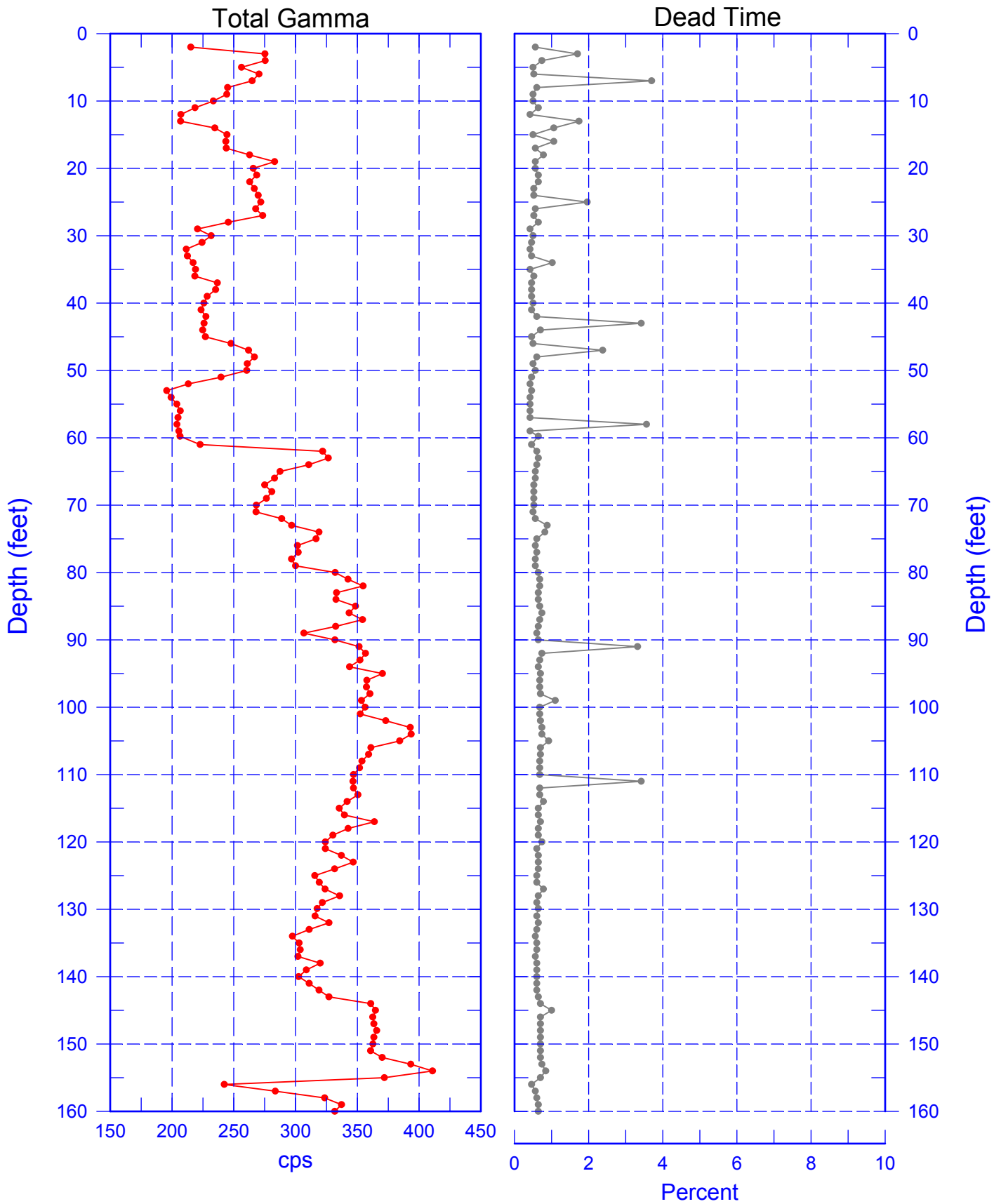


Zero Reference - Top of Casing

Last Logging Date - 08/13/03

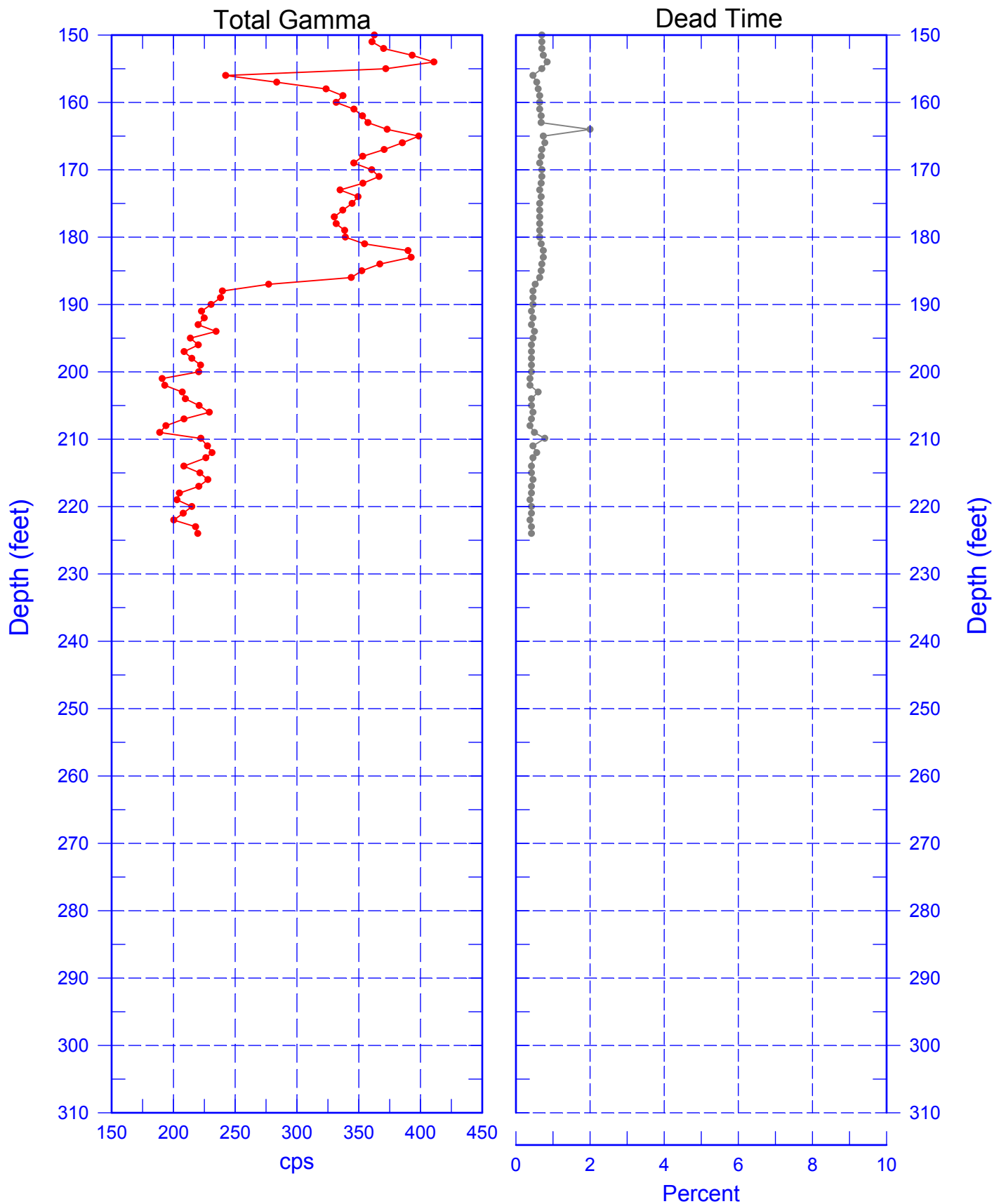
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Total Gamma & Dead Time



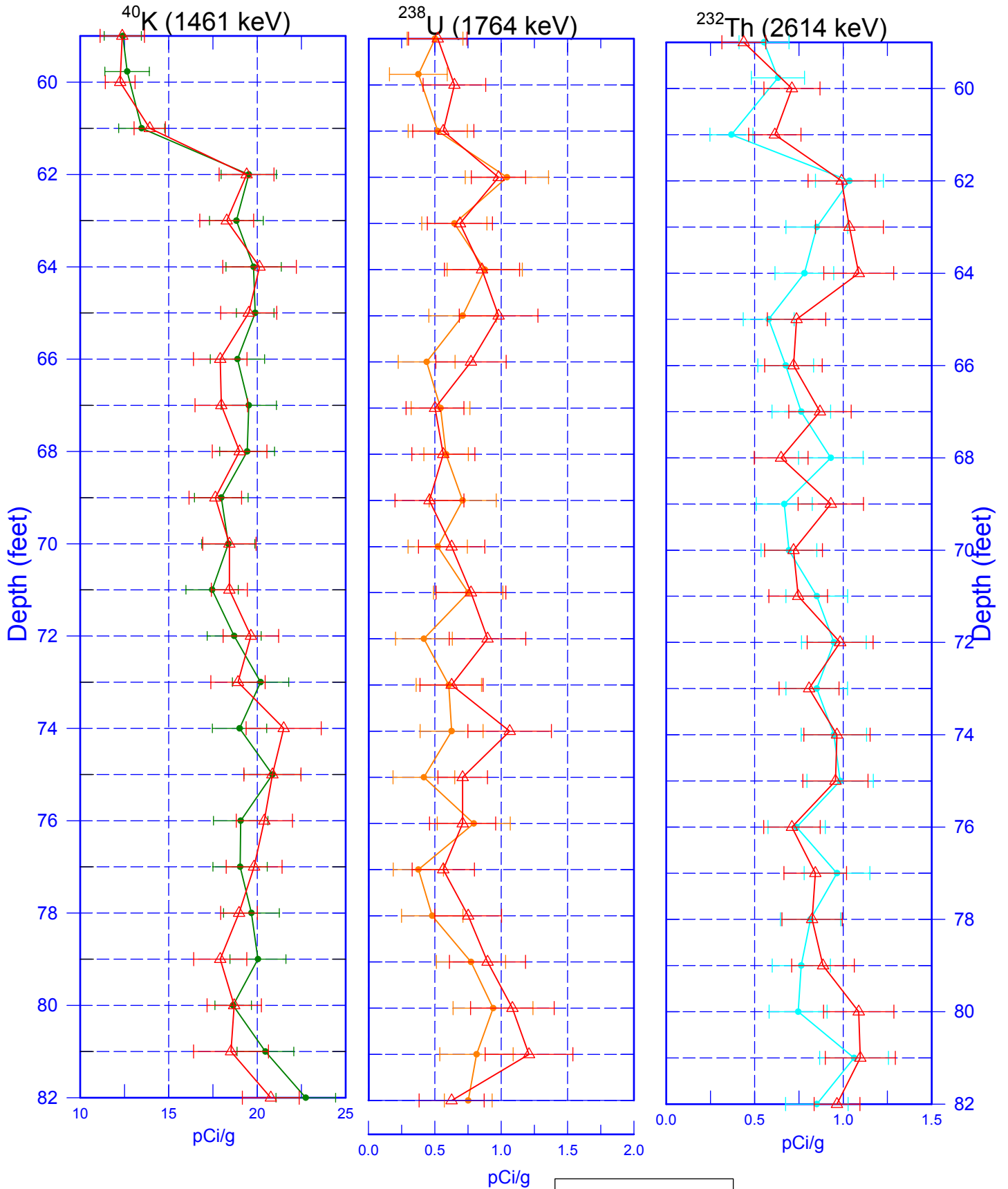
299-W22-38 (A7857)

Total Gamma & Dead Time



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Repeat Section of Natural Gamma Logs



Zero Reference - Top of Casing

Last Log Date - 08/13/03